**Assignment 5**

1. The righting lever of a ship under heeling is
2. GM b)GZ c)KG d) GZsinφ
3. At small angles of heel, righting arm=
4. GMsinφ b)GMcosφ c) KGsinφ d)KN
5. Slope of the GZ curve at φ=0 ͦ taken at 1 radian gives
6. sin φ b)GM c)heeling lever d) none of the above
7. If the ship has an initial list and is stable there, is called
8. Heeling b)listing c)Lolling d)toppling
9. At the angle of loll, the ship’s GM is
10. 0 b)negative c)positive d)large
11. A ship with an initial loll can be stabilized by
12. Listing b)trimming c)shifting weights d)all the above
13. Shifting of weights vertically downwards causes GZ values in the GZ curve to be
14. increased b) decreased c)not change d) none of the above
15. Area under the GZ curve is called
16. Stability b)Statical stability c)dynamical stability d)none of the above
17. Dynamical stability concept is based on the conservation of
18. Momentum b)energy c)weight d)stability
19. Dynamical stability is weight\*X where X is
20. GM b)GZ c)moment d)KG

Questions 11-14 are from the below problem;

A vessel displacing 15000 tonnes has KG 7m. Cargo is redistributed to cause KG to rise by 0.25m. The values of GZ in the initial conditions were:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Heel  (Degrees) | 0 | 15 | 30 | 45 | 60 | 75 | 90 |
| GZ  M | 0.00 | 0.391 | 1.000 | 1.138 | 0.774 | 0.129 | -0.584 |

1. For the initial condition, the range of stability is:
2. 50 b)63 c) 71 d)78
3. For the final condition, the range of stability is
4. 34 b)53 c)60 d)72
5. The angle at which maximum initial GZ occurs is
6. 12 b)24 c)42 d)60
7. The initial G0M0 is
8. 1.9 m b) 2m c)0.1m d)1.3 m
9. The angle of vanishing stability occurs at GZ=

a)1 b)0 c)undefined d) none of the above